QSO DECOMPOSITION

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Draft version November 11, 2018

ABSTRACT

To be written. To be written.

Subject headings: galaxies: active — galaxies: evolution

1. INTRODUCTION

skeleton
1. The ML relation and why understand its evolution is important.
2. To understand this evolution, it is important to trace to high redshift. So, why it is difficult.
3. Introduce reference. Woo's. SS13, Treu's, Park79. In the theory, DeGraf...
4. This work, we introduces samples till redshift 1.7.

2. OBSERVATIONS AND DATA REDUCTION

In this section, we summarize the sample selection, observations, and data reduction of our sample.

2.1. *Sample selection*

We aim to study the relation between the BH masses ($\mathcal{M}_{\rm BH}$) and their host galaxy properties including luminosities ($L_{\rm host}$) stellar mass to redshift at $z > 1$. For this propose, we focus on the broad-line (type-1) AGNs as provided by the X-ray coverage of COSMOS (Civano et al. 2016), (E)-CDFS-S (Lehmer et al. 2005; Xue et al. 2011), and SXDS (Ueda et al. 2008) fields. We select the broad-line AGNs at redshift region $1.2 < z < 1.7$ which cover a BH range $7.5 < \log\mathcal{M}_{\rm BH} < 8.5$. The Near IR spectra of AGNs are available from the survey of Subaru's Fiber Multi-Object Spectrograph (FMOS, Kimura et al. 2010; Schulze et al. 2018), a near-infrared (0.9-1.8 μm) spectrograph have with 400 apertures. The FMOS survey provides the best $\mathcal{M}_{\rm BH}$ estimates by $H\alpha$ and $H\beta$ lines out to $z \sim 1.7$ (Greene & Ho 2005; Matsuoka et al. 2013; Nobuta et al. 2012).

Our final sample is composed of 36 AGNs; 32 of them are new systems **(32+4?, the information of these four sample?)**. To compare with the samples in the literature, we adopt the samples from ... **The samples from H0licow7** For the calibration with the local relation, we introduce the well-defined 19 local AGN measurements (Bennert et al. 2010; Peterson et al. 2004) which defines the zero-point.

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2.2. *Observation and reduction*

Introduce the QSO surface photometry
Introduce the AGN broad line Emission

2.2.1. *HST image for photometry*

The QSO surface photometry in IR Channel Filters.
The ACS data.

2.2.2. *AGN Emission line*

The introduction of the BH inferred by the board emission line.

3. ANALYSIS

3.1. *QSO image decomposition*

3.1.1. *PSF library*

Introduce the PSF library

3.1.2. *Modeling method*

Introduce the lenstronomy. Model the PSF in each library. Inspired by Simon's work, we rank the performance of the each PSF and weight for the final fitting result.

3.1.3. *host luminosity and stellar mass estimates*

k-correction by the galaxy model assumption
stellar mass

3.2. *BH masses*

Introduce different recipes as used in the paper.

4. RESULTS

5. SUMMARY

We presented the study of the Mbh and host property's evolution to high redshift until 1.8.

ACKNOWLEDGMENTS

We thank Vivien Bonvin, Simon Birrer, Matthew W. Auger, Xiao-Lei Meng for useful suggestions and technical supports. X.D. acknowledges support by China Postdoctoral Science Foundation Funded Project; he is also grateful for Zong-Hong Zhu's support and funding. T.T. acknowledges support by the Packard Foundation in the form of a Packard Research Fellowship.

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